

### **Remarks**

The above amendments and these remarks are in reply to the Office action mailed November 19, 2003. Entry of the above amendments and these remarks is respectfully requested. It is submitted that all claims are in condition for allowance after entry of these amendments and remarks.

Claims 1, 19, and 21 have been amended, claims 20 and 22 have been cancelled, and claim 47 has been added. Claims 1- 8, 11, 13 - 19, 21, 24, 25, and 47 are presented herewith for consideration.

#### **I. Summary of the Examiner's Rejections**

Claims 1-6, 8, 11, 17-22, 24 and 25 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,301,965 ("*Chu*").

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Chu* in view of U.S. Patent No. 6,386,032 ("*Lemkin*").

Claims 13-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Chu* in view of U.S. Patent No. 6,230,566 ("*Lee*").

#### **II. Summary of the Amendments**

Claims 1, 19, and 21 have been amended. No new matter has been added.

Claim 1 has been amended to recite, among other limitations:

“at least one proof mass, *said at least one proof mass including a first proof mass having a first section electrically isolated from a second section;*  
at least a first and a second electrically decoupled sense capacitors, said first capacitor comprising at least *a first independent terminal on said first section of said first proof mass* and a second independent terminal on said substrate, said second capacitor comprising at least *a first independent terminal on said second section of said first proof mass* and a second independent terminal on said substrate.” (*Emphasis added*).

Support for the amendment can be found in Applicants' specification, including the disclosure relating to Figure 2 which illustrates “a novel proof-mass structure with dual sense capacitors.” *Specification*, p. 7, ll. 20-21. Applicants describe the proof-mass structure as comprising:

“*proof-mass sections 52 and 62, mechanically attached, but electrically isolated by a dielectric-lined isolation trench 59.* Each proof-mass section includes conductive electrodes 52a,b, 62a,b that form one electrode of a substantially parallel-plate capacitor... Conductive electrodes 50a,b 60a,b form second

electrodes of substantially parallel-plate capacitors. Conductive electrodes 50a,b 60a,b are mechanically attached to substrate 58 by dielectric-filled trenches at anchor points 51a,b 61a,b. Thus, *the structure illustrated in Figure 2 comprises a single proof-mass with capacitors formed by the following pairs of electrodes: 60a, 62a; 60b, 62b; 50a, 52a; 50b, 52b.*” *Specification*, p. 7, ln 26 – p. 8, ln. 13 (*emphasis added*).

Claims 19 and 21 have been amended to maintain consistency with amended claim 1. These amendments are not made for any reason related to patentability or in response to any rejection or objection by the Examiner.

Claims 20 and 22 have been cancelled. These claims are cancelled without any disclaimer of the subject matter contained therein. The claims are not cancelled for any reason related to patentability or in response to any rejection or objection by the Examiner.

Claim 47 has been added. No new matter has been added. Claim 47 includes the limitations of claims 1 and 7, pending prior to the present amendment.

### **III. Response to Rejections Under 35 U.S.C. § 102(e)**

Claims 1-6, 8, 11, 17-22, 24 and 25 were rejected under 35 U.S.C. 102(e) as being anticipated by Chu et al. (6,301,965). It is respectfully submitted that claims 1-6, 8, 11, 17-19, 21, 24, and 25 are novel and patentable over *Chu* because *Chu* fails to disclose each of the limitations of the claims.

It is respectfully submitted that *Chu* fails to disclose:

“at least one proof mass, said at least one proof mass including *a first proof mass having a first section electrically isolated from a second section,*” (*emphasis added*)

as recited in amended claim 1.

The Examiner stated that *Chu* discloses “a pair of oppositely connected single proof-mass (34)” at col. 13, ll. 50-64. *Chu*, as referenced, discloses that a “dual-proof-mass MEM accelerometer structure 70 can be formed from a pair of oppositely connected single-proof-mass MEM accelerometer structures 12 as described previously with reference to FIG.1.”

Thus, *Chu* does not disclose “a first proof mass having a first section electrically isolated from a second section,” as recited in claim 1. *Chu* clearly illustrates two distinct or “dual” proof masses, neither of which includes a “first section electrically isolated from a second section.” Furthermore, there is

nothing within *Chu* to suggest such a structure as recited in claim 1. *Chu* discloses a single proof mass structure in FIG. 1 but provides nothing to suggest altering it to include electrically isolated sections. Indeed, *Chu* only teaches the variation illustrated in FIG. 6, which includes “a pair of oppositely connected single-proof-mass MEM accelerometer structures 12 as described previously with reference to FIG. 1.” *Id.*

It is further submitted that *Chu* fails to disclose:

“said first capacitor comprising at least *a first independent terminal on said first section of said first proof mass* and a second independent terminal on said substrate, *said second capacitor comprising at least a first independent terminal on said second section of said first proof mass* and a second independent terminal on said substrate,” (*emphasis added*)

as also recited in amended claim 1.

The Examiner stated that *Chu* discloses that “each of the proof masses (34) contain a first independent terminal (note: one end of a terminal is attached to a contact pad at to right lower/upper side of proof masses(34) and the other node of terminal is attached to switch (56,60)), and a second independent terminal (e.g., ganging of electrodes (30, 32, 36)) on the common substrate (16).” *Office Action*, ¶ 3, pp. 2-3. As recognized by the Examiner, *Chu* discloses, with respect to each proof mass, a capacitor formed from “stationary electrodes 30 and 32” coupled to the substrate and “moveable electrodes 36 extending laterally outward” from the proof mass. *See Chu*, col. 7, ll. 4-20. With respect to FIG. 6 for example, a first capacitor is formed from stationary electrodes on the substrate and moveable electrodes on the first proof mass and a second capacitor is formed from stationary electrodes on the substrate and moveable electrodes on the second proof mass. *See id.* at col. 13, ln. 50 - col. 14, ln. 3. Accordingly, *Chu* does not disclose a “first capacitor comprising at least a first independent terminal on said first section of said first proof mass” and a “second capacitor comprising at least a first independent terminal on said second section of said first proof mass,” as recited in claim 1. In *Chu*, a first capacitor has a first terminal on a first proof mass and a second capacitor has a first terminal on a second proof mass. *Chu* does not disclose, and there is nothing to suggest, forming two capacitors, each with an independent terminal on the same proof mass.

Hence, each and every limitation of claim 1 is not disclosed in *Chu*. Accordingly, it is respectfully submitted that claim 1 is novel and patentable over *Chu* under 35 U.S.C. § 102(e). Claims 2-

6, 8, 11, 17-19, 21, 24, and 25 each ultimately depend from claim 1 and therefore, should be patentable for at least the reasons set forth with respect to claim 1.

**IV. Response to Rejection of Claim 7 under 35 U.S.C. § 103(a)**

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Chu* in view of *Lemkin*.

It is noted that the inventorship for the *Lemkin* patent is the same as that of the present application. It is further noted that the Date of Patent, and thus the publication date, of the *Lemkin* patent is May 14, 2002. Hence, the *Lemkin* patent is not prior art under any section of 35 U.S.C. § 102. Thus, it is respectfully submitted that the rejection of claim 7 is moot.

**V. Response to Rejection of Claims 13-16 under 35 U.S.C. § 103(a)**

Claims 13-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Chu* in view of *Lee*. Because *Chu* and *Lee*, alone or in combination, fail to teach or suggest each of the limitations of claims 13-16, it is respectfully submitted that the claims are patentable over the cited art.

It is respectfully submitted that *Chu* and *Lee*, alone or in combination, fail to teach or suggest:

“at least one proof mass, *said at least one proof mass including a first proof mass having a first section electrically isolated from a second section;*  
at least a first and a second electrically decoupled sense capacitors, said first capacitor comprising at least *a first independent terminal on said first section of said first proof mass* and a second independent terminal on said substrate, said second capacitor comprising at least *a first independent terminal on said second section of said first proof mass* and a second independent terminal on said substrate,”

as recited in claim 1, combined with “...a first and a second reference capacitor,” as recited in claim 13, and by their dependency from claim 13, claims 14-16.

*Lee* is cited for the disclosure of “a first and a second reference capacitor.” As set forth with respect to claim 1, however, *Chu* fails to disclose or suggest the limitations of claim 1 quoted above. Hence, even if *Lee* is combined with *Chu* as suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claims 13-16. Accordingly, it is respectfully submitted that claims 13-16 are patentable over the cited art under 35 U.S.C. § 103(a).

**VI. Newly Added Claim**

Claim 47 has been added. No new matter has been added. Claim 47 recites the limitations of claim 1 pending before the present amendment, coupled with the "frequency multiplexed" limitation set forth in claim 7. As set forth above, the rejection of dependent claim 7 is moot because the *Lemkin* patent used to reject that limitation is not prior art. Accordingly, it is respectfully submitted that newly added claim 47 is patentable over the cited art.

**VII. Conclusion**

Based on the above amendments and these remarks, reconsideration of claims 1- 8, 11, 13 - 19, 21, and 24 -25, and consideration of newly added claim 47 is respectfully requested. It is respectfully submitted that all claims are in condition for allowance after entry of the present amendments and remarks.


The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, February 19, 2004.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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